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For: Band Model Method for Modeling Atmospheric Propagation at Arbitrarily Fine Spectral Resolution

ABSTRACT

A radiative transport band model algorithm has been developed for prediction and analysis of high spectral resolution radiometric measurements. Atomic and molecular line center absorption is determined from finite spectral bin equivalent widths. A new mathematically exact expansion for finite bin equivalent widths provides high accuracy at any desired spectral resolution. The temperature and pressure dependent Voigt line tail spectral absorption contributing to each spectral bin is pre-computed and fit to Padé approximants for rapid and accurate accounting of neighboring-to-distant lines.